

What is Claimed is:

1. A method for integrating a pallet onto a conveyor, comprising the steps of:

providing a plurality of adjacently aligned pallets wherein said pallets are driven at a first rate of speed along a predetermined path of travel;

introducing a new pallet to said adjacently aligned pallets at a position spaced from the last pallet of said adjacently aligned pallets;

driving said new pallet at a second rate of speed;

monitoring the position of said new pallet relative to said position of said last pallet; and

adjusting the second rate of speed of said new pallet based on the relative position of said new pallet relative to said last pallet until said new pallet is traveling at said first rate of speed and is adjacently aligned with said last pallet within a predetermined docking area.

2. The method stated in claim 1, further comprising the steps of:

providing a first conveyor line for moving said adjacently aligned pallets along said predetermined path of travel.

3. The method stated in claim 2, further comprising the steps of:

providing a first motor coupled to said first conveyor for driving said adjacently aligned pallets at said first rate of speed.

4. The method stated in claim 3, further comprising the steps of:

providing an encoder coupled to said first motor to monitor the position of said last pallet of said adjacently aligned pallets.

5. The method stated in claim 1, further comprising the steps of:

providing a second conveyor line for moving said new pallet along a predetermined path of travel.

6. The method stated in claim 5, further comprising the steps of:

providing a second motor coupled to said second conveyor for driving said new pallet at said second rate of speed.

7. The method stated in claim 6, further comprising the steps of:

providing an encoder coupled to said second motor to monitor the position of said new pallet.

8. The method stated in claim 1, wherein said step for adjusting the second rate of speed of said new pallet further comprises the steps of:

calculating the relative position of the new pallet relative to the last pallet of the adjacently aligned pallets;

maintaining the second rate of speed of said new pallet at a predetermined upper level if the relative distance between the new pallet and said last pallet of said adjacently aligned pallets exceeds the distance of said predetermined docking area;

and

adjusting the second rate of speed of said new pallet if the relative distance between said new pallet and said last pallet of said adjacently aligned pallets does not exceed said distance of said predetermined docking area.

9. The method stated in claim 8, wherein said step for adjusting the second rate of speed of said new pallet, further comprises the steps of:

calculating a deceleration ramp through the equation, $RAMP = (FIRST\ RATE\ OF\ SPEED) - (SECOND\ RATE\ OF\ SPEED) / ((POSITION\ OF\ SAID\ NEW\ PALLET) - (POSITION\ OF\ SAID\ LAST\ PALLET))$.

10. The method stated in claim 9, further comprising the steps of:

calculating the speed of the new pallet through the equation, $SECOND\ RATE\ OF\ SPEED = (RAMP\ (POSITION\ OF\ SAID\ NEW\ PALLET) - (POSITION\ OF\ SAID\ LAST\ PALLET)) + (FIRST\ RATE\ OF\ SPEED)$.

11. The method stated in claim 10, further comprising the steps of:

continually adjusting the second rate of speed until the second rate of speed of the new pallet equals the first rate of speed of the last pallet and until the new pallet is adjacently aligned with the last pallet.

12. An apparatus for integrating a pallet onto a conveyor, comprising:

a first conveyor for carrying and driving at least one pallet at a first rate of

speed;

a second conveyor for carrying and driving a new pallet at a second rate of speed;

means for monitoring the relative position of said new pallet relative to said at least one pallet;

a computer processor for determining said second rate of speed in order that said new pallet may become adjacently aligned with said at least one pallet within a predetermined docking area; and

a controller for adjusting said second rate of speed in response to a signal from said computer processor.

13. The apparatus stated in claim 12, further comprising:

said first conveyor having a first motor for driving said at least one pallet at said first rate of speed; and

said second conveyor having a second motor for driving said new pallet at said second rate of speed.

14. The apparatus stated in claim 13, wherein said monitoring means further comprises:

a first encoder coupled to said first motor for monitoring the position of said last pallet of said adjacently aligned pallets; and

a second encoder couple to said second motor for monitoring the position of said new pallet.

15. An apparatus for integrating a pallet onto a conveyor, comprising:
- a first conveyor for carrying a plurality of adjacently aligned pallets along a predetermined path of travel;
 - a first motor coupled to said conveyor for driving said adjacently aligned pallets at a first rate of speed;
 - a first encoder coupled to said first motor for monitoring the position of said last pallet of said adjacently aligned pallets on said first conveyor;
 - a second conveyor for carrying and introducing a new pallet to said first conveyor;
 - a second motor coupled to said second conveyor for driving said new pallet at a second rate of speed;
 - a second encoder couple to said second motor for monitoring the position of said new pallet;
 - a computer processor for determining the relative position of said last pallet of said adjacently aligned pallets relative to said new pallet and for determining said second rate of speed to adjacently align said new pallet with said last pallet within a predetermined docking area; and
 - a controller for adjusting said second rate of speed of said second motor in response to a signal from said computer processor.
16. The apparatus stated in claim 5, further comprising:
- a sensor adjacent said docking area for determining whether said new pallet is adjacently aligned with said last pallet when leaving said docking area.

17. The apparatus stated in claim 16, further comprising:

a fault indicator, in communication with said sensor, for indicating when said new skillet and said last skillet are not adjacently aligned when leaving said docking area.